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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/579,790	05/18/2006	Yoshiyuki Takase	Q94561	7397
23373 7590 09/04/2008 SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037				
EXAMINER				
BUJE, NICOLE M				
ART UNIT		PAPER NUMBER		
1796				
MAIL DATE		DELIVERY MODE		
09/04/2008		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/579,790

Applicant(s)

TAKASE ET AL.

Examiner

NICOLE M. BUJE

Art Unit

1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 June 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SI/02)
Paper No(s)/Mail Date 20080609
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

The amendment filed 06/09/2008 has been entered. Claims 1-10 remain pending in the application. The previous claim objection of claim 1 is withdrawn in light of Applicant's amendment to claim 1.

The declaration under 37 CFR 1.132 filed 06/09/2008 is insufficient to overcome the rejection of claim 7 based upon Hiraga et al. applied under 35 USC 103 as set forth in the last Office action because: it is difficult to discern the differences in three figures provided on P3 of the said declaration. Furthermore, the three figures appear to be qualitative figures since values have not been provided, and the said figures are not on the same scale. Therefore it is difficult to make an objective evaluation of the evidence. Additionally, only one example of the total metal content is less than or equal to 1ppm. To establish unexpected results over a claimed range, applicants should compare a sufficient number of tests both inside and outside the claimed range to show the criticality of the claimed range. In re Hill, 284 f.2d 955, 128 USPQ 197 (CCPA 1960). See MPEP 716.02(d).

In view of the foregoing, when all of the evidence is considered, the totality of the rebuttal evidence of nonobviousness fails to outweigh the evidence of obviousness.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiraga et al. (US 6,451,962) in view of Asawa et al. (US 4,340,680) as evidenced by Colainna et al. (US 5,608,020).

Regarding claim 1, Hiraga et al. discloses a method of producing a fluoropolymer by which a melt-processable fluoropolymer (A) having a unstable terminal group or groups, such as carboxylic acid is subjected to melt- kneading in a kneader comprising a stabilization treatment zone to thereby produce a fluoropolymer (B) resulting from conversion of said specific unstable terminal group or groups to $-CF_2H$ (Abstract, C1/L5-9, C4/L56-62), the melt-kneading being carried out in the absence or presence of an alkali metal element or alkaline earth metal element (C2/L64-C3/L3), and the melt-kneading in said stabilization treatment zone being carried out in the presence of water (Abstract, C4/L63-C5/L12). Hiraga et al. further discloses that the adding amount of alkali metal element or alkaline earth metal element is not more than 10% based on the total number of unstable groups (carboxylic acid end group) (C4/L64-C5L9).

However, Hiraga et al. does not disclose the mass of said alkali metal element or alkaline

earth metal element being not greater than 2 ppm of the composition under melt-kneading. As the stabilization rate of unstable end groups and degree of coloration are variables that can be modified by adjusting said amount of alkali metal element or alkaline earth metal element as taught by Hiraga et al. (C4/L63-C5/L12), the precise amount of alkali metal element or alkaline earth metal element would have been considered a result effective variable by one having ordinary skill in the art at the time the invention was made. Accordingly, one of ordinary skill in the art at the time the invention was made would have optimized, by routine experimentation, the amount of alkali metal element or alkaline earth metal element, and the motivation would have been to obtain desired stabilization rate of unstable end groups and degree of coloration (*In re Boesch*, 617 F.2d. 272,205 USPQ 215 (CCPA 1980)), since it has been held that where the general conditions of the claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. (*In re Aller*, 105 USPQ 223).

However, Hiraga et al. does not disclose unstable terminal groups (P) comprising alkoxycarbonyl groups, fluoroalkoxycarbonyl groups and/or carboxyl group quaternary nitrogen compound salts. Asawa et al. teaches fluorinated copolymers which do not have carboxylic acid groups (i.e. acid ester groups, acid amide groups, quaternary ammonium salt groups) have functional groups being convertible into carboxylic acid groups (C4/L40-50). Hiraga et al. and Asawa et al. are analogous art concerned with the same field of endeavor, namely fluorinated polymers with unstable end groups. It would have been obvious to one of ordinary skill in the art at the time of invention to use the fluorinated polymers of Asawa et al. in the process of Hiraga et al., and the motivation to do so would have been as Colaianna et al. suggests to convert

all of the unstable end groups into the same kind and equal to the ones, whereby the stabilization treatment can be effectively carried out in only one stage (C2/L12-15).

Regarding claim 2, Hiraga et al. discloses all the claim limitations as set forth above. Hiraga et al. further discloses the method wherein the melt-kneading in the stabilization treatment zone is carried out in the presence of oxygen gas (Abstract, C6/L23-36).

Regarding claims 3 and 4, Hiraga et al. discloses all the claim limitations as set forth above. Hiraga et al. further discloses the method wherein the kneader is a twin-screw extruder (C7/L53-58).

Regarding claim 5, Hiraga et al. discloses all the claim limitations as set forth above. Hiraga et al. further discloses the method wherein the temperature in the stabilization treatment zone is set to 280 to 430°C (C10/L28-34).

Regarding claim 6, Hiraga et al. discloses all the claim limitations as set forth above. Hiraga et al. further discloses a fluoropolymer obtained (C8/L21-26). Regarding the method limitations recited on said claim, the examiner notes that even though a product-by-process is defined by the process steps by which the product is made, determination of patentability is based on the product itself. *In re Thorpe*, 777 F.2d 695, 227 USPQ 964 (Fed. Cir. 1985). As the court stated in *re Thorpe*, 777 F.2d at 697, 227 USPQ at 966 (The patentability of a product does not depend on its method of production. *In re Pilkington*, 411 F.2d 1345, 1348, 162 USPQ 145, 147 (CCPA 1969). If the product in a product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.).

Regarding claim 7, Hiraga et al. discloses all the claim limitations as set forth above.

Hiraga et al. further discloses a fluoro-polymerised material comprising a fluoropolymer, wherein said fluoropolymer comprises (1) a fluorocopolymer derived from at least one fluoromonomer selected from the group consisting of tetrafluoroethylene, hexafluoropropylene, vinylidene fluoride and chlorotrifluoroethylene, (2) a chlorotrifluoroethylene homopolymer and/or (3) a vinylidene fluoride homopolymer, said fluorocopolymer is one resulting from polymerization of a perfluoro(alkyl vinyl ether) and/or ethylene or one not resulting from such polymerization (C3/L12-28), said fluoropolymer is one of which polymer terminal groups are -CF₂H and not more than 20 unstable terminal groups (Q) per 10⁶ carbon atoms (Example 1 in Table 1, C10), and said fluoro-polymerised material contains or does not contain a metal residue containing an alkali metal element and/or alkaline earth metal element. However, Hiraga et al. does not disclose the mass of said alkali metal element and/or alkaline earth metal element is not greater than 2 ppm of said fluoro-polymerised material.

Regarding the specific amount of alkali metal element or alkaline earth metal element, since the instant specification is silent to unexpected results, the specific amount of alkali metal element or alkaline earth metal element is not considered to confer patentability to the claims. As the stabilization rate of unstable end groups and degree of coloration are variables that can be modified by adjusting said amount of alkali metal element or alkaline earth metal element, the precise amount of alkali metal element or alkaline earth metal element would have been considered a result effective variable by one having ordinary skill in the art at the time the invention was made. As such, without showing unexpected results, the claimed amount of alkali metal element or alkaline earth metal element cannot be considered critical. Accordingly, one of ordinary skill in the art at the time the invention was made would have optimized, by routine

experimentation, the amount of alkali metal element or alkaline earth metal element to obtain desired stabilization rate of unstable end groups and degree of coloration (*In re Boesch*, 617 F.2d. 272,205 USPQ 215 (CCPA 1980)), since it has been held that where the general conditions of the claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. (*In re Aller*, 105 USPQ 223).

Regarding claim 8, Hiraga et al. discloses all the claim limitations as set forth above. Additionally, Hiraga et al. discloses the fluoro-polymerised material wherein the fluoropolymer is a product obtained by emulsion polymerization (C3/L22-28, C3/L64-C4/L14).

Regarding claim 9, Hiraga et al. discloses all the claim limitations as set forth above. Additionally, Hiraga et al. discloses the fluoro-polymerised material wherein the fluoropolymer is a fluorocopolymer derived from tetrafluoroethylene and hexafluoropropylene (Example 1, C10/L11-38)

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hiraga et al. (US 6,451,962) as applied to claims 7 and 9 above, and further in view of Hiraga et al. (EP 1260526).

Regarding claim 10, Hiraga et al. (US '962) discloses the fluoro-polymerized material as shown above in claims 7 and 9. Hiraga et al. (US '962) further discloses the fluoro-polymerised material wherein the fluorocopolymer derived from tetrafluoroethylene and hexafluoropropylene is a fluorocopolymer having a tetrafluoroethylene unit, a hexafluoropropylene unit, and a perfluoro(alkyl vinyl ether) unit content of 0.5 to 16%, which significantly overlaps the claimed range of 0 to 5% by mass (C3/L22-28). However, Hiraga et al. (US '962) does not disclose the specific amounts of tetrafluoroethylene and hexafluoropropylene.

Regarding the specific amounts of tetrafluoroethylene and hexafluoropropylene, since the instant specification is silent to unexpected results, the specific amounts of tetrafluoroethylene and hexafluoropropylene is not considered to confer patentability to the claims. As the electrical conductivity and corrosion ability are variables that can be modified by adjusting said amounts of tetrafluoroethylene and hexafluoropropylene as taught by Hiraga et al. (EP '526), the precise amounts of tetrafluoroethylene and hexafluoropropylene would have been considered a result effective variable by one having ordinary skill in the art at the time the invention was made. As such, without showing unexpected results, the claimed amounts of tetrafluoroethylene and hexafluoropropylene cannot be considered critical. Accordingly, one of ordinary skill in the art at the time the invention was made would have optimized, by routine experimentation, the amounts of tetrafluoroethylene and hexafluoropropylene to obtain desired electrical conductivity and corrosion ability (*In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980)), since it has been held that where the general conditions of the claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. (*In re Aller*, 105 USPQ 223).

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined claim(s) is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re*

Vogel, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-5 are directed to an invention not patentably distinct from claims 1-3 and 6 of commonly assigned U.S. Patent No. 6,451,962 in view of Asawa et al. (US 4,340,680) as evidenced by Colainna et al. (US 5,608,020).

Claims 1-5 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-3 and 6 of Hiraga et al., U.S. Patent No. 6,451,962. Although the conflicting claims are not identical, they are not patentably distinct from each other.

Regarding instant claims 1-5, claims 1-3 and 6 of Hiraga et al. (US '962) recite a method of producing a fluoropolymer by which melt-processable fluoropolymer (A) having terminal group or groups (P) is subjected to melt-kneading in a kneader comprising a stabilization treatment zone to thereby produce a fluoropolymer (B) resulting from conversion of said unstable end groups, the melt-kneading being carried out in the absence or presence of an alkali metal element or alkaline earth metal element, and the melt-kneading in said stabilization treatment zone being carried out in the presence of water (claim 1). Hiraga et al. further recites the method wherein the melt-kneading in the stabilization treatment zone is carried out in the presence of oxygen gas (claim 2). Additionally, Hiraga et al. recites the method wherein the

kneader is a screw-type extruder, wherein the screw-type extruder is a twin-screw extruder (claim 3).

However, Hiraga et al. does not recite the conversion of said specific unstable terminal group or groups to $-\text{CF}_2\text{H}$, the mass of said alkali metal element or alkaline earth metal element being not greater than 2 ppm of the composition, and the temperature in the stabilization treatment zone is set at 280 to 430°C. Asawa et al. teaches fluorinated copolymers which do not have carboxylic acid groups (i.e. acid ester groups, acid amide groups, quaternary ammonium salt groups) have functional groups being convertible into carboxylic acid groups (C4/L40-50). Hiraga et al. and Asawa et al. are analogous art concerned with the same field of endeavor, namely fluorinated polymers with unstable end groups. It would have been obvious to one of ordinary skill in the art at the time of invention to use the fluorinated polymers of Asawa et al. in the process of Hiraga et al., and the motivation to do so would have been as Colaianna et al. suggests to convert all of the unstable end groups into the same kind and equal to the ones, whereby the stabilization treatment can be effectively carried out in only one stage (C2/L12-15).

Within the disclosure of Hiraga et al., the reference does disclose specific unstable terminal groups of claim 1 and the conversion of said specific unstable terminal group or groups to $-\text{CF}_2\text{H}$. Hiraga et al. does disclose that the adding amount of the alkali metal element or alkaline earth metal element is not more than 10%, but does not disclose the specific amount in claim 1. Additionally, Hiraga et al. discloses the method of producing a fluoropolymer wherein the temperature in the stabilization treatment zone is set at 280 to 430°C.

Regarding the specific amount of alkali metal element or alkaline earth metal element, since the instant specification is silent to unexpected results, the specific amount of alkali metal

element or alkaline earth metal element is not considered to confer patentability to the claims. As the stabilization rate of unstable end groups and degree of coloration are variables that can be modified by adjusting said amount of alkali metal element or alkaline earth metal element, the precise amount of alkali metal element or alkaline earth metal element would have been considered a result effective variable by one having ordinary skill in the art at the time the invention was made. As such, without showing unexpected results, the claimed amount of alkali metal element or alkaline earth metal element cannot be considered critical. Accordingly, one of ordinary skill in the art at the time the invention was made would have optimized, by routine experimentation, the amount of alkali metal element or alkaline earth metal element to obtain desired stabilization rate of unstable end groups and degree of coloration (*In re Boesch*, 617 F.2d. 272,205 USPQ 215 (CCPA 1980)), since it has been held that where the general conditions of the claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. (*In re Aller*, 105 USPQ 223).

Response to Arguments

Applicant's arguments filed 06/09/2008 have been fully considered and are substantially persuasive. The following comments apply:

A) Applicant's argument that Hiraga does not disclose the melt-kneading of a fluororesin having the specific unstable terminal group (P) (P8) is persuasive. However, upon further consideration, a new ground(s) of rejection is made in view of newly found prior art reference.

B) Applicant's argument that Hiraga teaches that the reaction accelerating agent is preferably added together with water and this leads away from rather than towards this invention

(P8) is not persuasive. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., absence of reaction accelerating agent) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

C) Applicant's argument that the fluoropolymer of claim 6 (product) is patentable over the applied prior art, where similar to claim 7 which limits the content of the alkali metal element and/or alkaline earth metal element to not greater than 2 ppm, the product of claim 6 (as made by the method of claim 1) also limits the content of the alkali metal element of alkaline earth metal element to not greater than 2 ppm of the composition under melt-kneading is not persuasive. A product by process is based on the recited product and does not depend on its method of production as shown above in claim 6. Additionally, the method is in fact taught in modified Hiraga et al. as shown above in claim 1.

D) Applicant's argument regarding claim 10 that Hiraga does not provide a polymer having a content of the alkali metal element and/or alkaline earth metal element of not greater than 2 ppm as claimed in claim 7 and EP '526 also does not meet this limitation of claim 7 is not persuasive. Hiraga does disclose a polymer having a content of the alkali metal element and/or alkaline earth metal element of not greater than 2 ppm as shown above in claim 7. EP '526 teaches the amount of alkali metal or alkali earth metal must be controlled [0018]. EP '526 further teaches that the unstable end groups should be converted to -CF₂H [0022]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to use the method of Hiraga to produce the fluoro-polymerized material of EP'526.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NICOLE M. BUIE whose telephone number is (571)270-3879. The examiner can normally be reached on Monday-Thursday with alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on (571)272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark Eashoo, Ph.D./
Supervisory Patent Examiner, Art Unit 1796
2-Sep-08

/N. M. B./
Examiner, Art Unit 1796
8/28/2008